Structure Percent Assigned to Telephone Company						
	Distribution			Feeder		
Density Zone	Aerial	Buried	Underground	Aerial	Buried	Underground
0-5	.50	.33	1.00	.50	.40	.50
5-100	.33	.33	.50	.33	.40	.50
100-200	.25	.33	.50	.25	.40	.40
200-650	.25	.33	.50	.25	.40	.33
650-850	.25	.33	.40	.25	.40	.33
850-2,550	.25	.33	.33	.25	.40	.33
2,550-5,000	.25	.33	.33	.25	.40	.33
5,000-10,000	.25	.33	.33	.25	.40	.33
10,000+	.25	.33	.33	.25	.40	.33

Support: Industry experience and expertise of Hatfield Associates and outside plant engineers; Montgomery County, MD Subdivision Regulations Policy Relating to Grants of Location for New Conduit Network for the Provision of Commercial Telecommunications Services; Monthly Financial Statements of the Southern California Joint Pole Committee; Conversations with representatives of local utility companies. See the structure sharing discussion in Appendix A.

5.4. OTHER

5.4.1. Income tax rate

Definition: The combined federal and state income tax rate on earnings paid by a telephone company.

Default Value: 39.25%

Support: Based on a nationwide average of composite federal and individual state tax rates.

5.4.2. Overhead factor

Definition: Forward-looking corporate overhead costs, expressed as a fraction of the sum of all capital costs and operations expenses calculated by the model.

Default Value: 10.4%

Support: Based on data from AT&T's Form M. See, also earlier ex parte filing and Appendix B.

5.4.3. Other taxes factor

Definition: Operating taxes (primarily gross receipts and property taxes) paid by a telephone company in addition to federal and state income taxes.

Default Value: 5%

Support: This is the average for all Tier I LECs, expressed as a percentage of total revenue. Revenue and expense data are taken from ARMIS report 43-03. See, also Appendix B.

5.4.4. Billing/bill inquiry per line per month

Definition

The cost of bill generation and billing inquiries for end users, expressed as an amount per line per month.

Default Value

$1.22

Support

Based on data found in the New Hampshire Incremental Cost Study, section for billing and bill inquiry where unit costs are developed. This study uses marginal costing techniques, rather than TSLRIC. Therefore, billing/bill inquiry-specific fixed costs were added to conform with TSLRIC principles.[43]

5.4.5. Directory listing per line per month

Definition

The monthly cost of creating and maintaining white pages listings on a per line, per month basis.

Default Value

$0.15

5.4.6. Forward-looking network operations factor

Definition

The forward-looking factor applied to a specific category of expenses reported in ARMIS called Network Operations. The factor is expressed as the percentage of current ARMIS-reported Network Operations.

Default Value

50%

Logic

ARMIS-based network operations factors are a function of telephone company embedded costs. As such, these costs are driven upward by antiquated systems that are more costly to maintain than the modern equipment that is installed by the Hatfield Model. Telco legacy systems require extensive staffing at end offices for supervisory, repair, upgrade and installation work. The Hatfield Model assumes that network surveillance, provisioning and software upgrades can be executed from a central facility. Furthermore, rather than housing a team of technicians at each office, it assumes that a team of well-equipped technicians can be dispatched to offices on an as-needed basis. Additional operational efficiencies may be realized through streamlined processes and outsourcing where appropriate. Expert sources have indicated that staff reductions of 50 percent under current RBOC levels are attainable.

Support

The forward-looking network operations factor is supported by the testimony of Pacific Bell witness Mr. R.L. Scholl, dated April 17, 1996.

Mr. Scholl's testimony estimated in the California Arbitration proceedings that network operations

[43] New England Telephone Company, *supra.*, note 45, p. 122, 126.

expenses were 55 percent lower than the network operations expenses determined by the Hatfield Model developers from ARMIS data.

In a letter to the FCC, Pacific Bell reiterated its position that forward-looking expenses represent "only approximately 46% of the ARMIS accounts."[44] Consequently, the forward-looking network operations factor in Release 3.1 is 50 percent. See, also Appendix B.

5.4.7. Alternative Central office switching expense factor

Definition: The expense to investment ratio for digital switching equipment, used as an alternative to the ARMIS expense ratio, reflecting forward looking rather than embedded costs. Thus, this factor multiplies the calculated investment in digital switching in order to determine the monthly expense associated with digital switching. This factor is not intended to capture the cost of software upgrades to the switch as all switching software is part of the capital value inputs to HM 3.1.

Default Value: 2.69%

Support: New England Incremental Cost Study.[45] See, also Appendix B.

5.4.8. Alternative circuit equipment factor

Definition: The expense to investment ratio for all circuit equipment (as categorized by LECs in their ARMIS reports), used as an alternative to the ARMIS expense ratio to reflect forward looking rather than embedded costs.

Default Value: 0.0153

Support: New England Incremental Cost Study.[46] See, also Appendix B.

5.4.9. End office traffic-sensitive fraction

Definition: The fraction of the cost of switching that is not associated with the line port of the switch.

Default Value: 70%

Support: This factor is a Hatfield Associates estimate of the average over several different switching technologies.

5.4.10. Per-line monthly LNP cost

Definition: The estimated cost of permanent Local Number Portability (LNP), expressed on a per-line, per-month basis, including the costs of implementing and maintaining the service. This is included in the USF calculations only, not the UNE rates, because it will be included in the definition of universal service once the service is implemented.

Default Value: $0.25

Support: This estimate is based on an ex parte submission by AT&T to the FCC in CC Docket No. 95-116.

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[44] "Comments of Pacific Bell Regarding Staff Workshops on Proxy Cost Model," CC Docket No. 96-45, January 24, 1997.

[45] New England Telephone Company, *supra.*, note 45, p. 394

[46] New England Telephone Company, *supra.*, note 45, p. 394

5.4.11. Carrier-carrier customer service per line

Definition: The yearly amount of customer operations expense associated with the provision of unbundled network elements by the LECs to carriers who purchase those elements.

Default Value: $1.69

Support: This calculation is based on representative amounts drawn from LEC ARMIS accounts 7150, 7170, 7190 and 7270 reported by all Tier I LECs in 1995. To calculate this charge, the amounts shown for each Tier 1 LEC in the referenced accounts are summed across the accounts and across all LECs, divided by the number of access lines reported by those LECs in order to express the result on a per-line basis, and multiplied by 70% to reflect forward-looking efficiencies in the provision of network elements. See, also Appendix B.

5.4.12. NID expense per line per year

Definition: The estimated annual NID expense on a per line basis, based on an analysis of ARMIS data modified to reflect forward looking costs. This is for the NID only, not the drop wire, which is included in the ARMIS cable and wire account.

Default Value: $1.00/line/year

Support: See Appendix B.

5.4.13. DS-0/DS-1 Terminal Factor

Definition: The relative terminal investment per DS-0, between the DS-1 and DS-0 levels.

Default Value: 12

Support: The computed ratio for investment per DS-0 provided in a DS-0 level signal to DS-0 provided in a DS-1 level signal, based on transmission terminal investments (i.e., 5.4.1).

5.4.14. DS-1/DS-3 Terminal Factor

Definition: The relative investment per DS-0, between the DS-3 and DS-1 levels.

Default Value: 10

Support: The computed ratio for investment per DS-0 provided in a DS-1 level signal to DS-0 provided in a DS-3 level signal, based on transmission terminal investments (i.e., 5.4.1).

5.4.15. Average Lines per Business Location

Definition: The average number of business lines per business location, used to calculate NID and drop cost.

Default Value: 4

Support: See discussion in section 2.2.5.

5.4.16. Average trunk utilization

Definition: The 24 hour average utilization of an interoffice trunk.

Default Value: 0.30

Support: AT&T Capacity Cost Study, adjusted upward to reflect the trend toward higher trunk utilization.[47]

[47] "A Study of AT&T's Competitors' Capacity to Absorb Rapid Demand Growth," *supra.*, note 26, p.4.

APPENDIX A

Structure Shares Assigned to Incumbent Local Telephone Companies

Overview

Due to their legacy as rate-of-return regulated monopolies, LECs and other utilities have heretofore had little incentive to share their outside plant structure with other users. To share would have simply reduced the "ratebase" upon which their regulated returns were computed. But today and going forward, LECs and other utilities face far stronger economic and institutional incentives to share outside plant structure whenever it is technically feasible. There are two main reasons. First, because utilities are now more likely to either face competition or to be regulated on the basis of their prices (e.g., price caps) rather than their costs (e.g., ratebase), a LEC's own economic incentive is to share use of its investment in outside plant structure. Such arrangements permit the LEC to save substantially on its outside plant costs by spreading these costs across other utilities or users. Second, many localities now strongly encourage joint pole usage or trenching operations for conduit and buried facilities as a means of minimizing the unsightliness and/or right-of-way congestion occasioned by multiple poles, or disruptions associated with multiple trenching activities.

Because of these economic and legal incentives, not only has structure sharing recently become more common, but its incidence is likely to accelerate in the future – especially given the Federal Telecommunications Act's requirements for nondiscriminatory access to structure at economic prices.

The degree to which a LEC can benefit from structure sharing arrangements varies with the type of facility under consideration. Sharing opportunities are most limited for multiple use of the actual conduits (e.g., PVC pipe) through which cables are pulled that comprise a portion of underground structure. Because of safety concerns, excess ILEC capacity within a conduit that carries telephone cables can generally be shared only with other low-voltage users, such as cable companies, other telecommunications companies, or with municipalities or private network operators. Although the introduction of fiber optic technology has resulted in slimmer cables that have freed up extra space within existing conduits, and thus enlarged actual sharing opportunities, the Hatfield Model does not assume that conduit is shared because as a forward-looking model of efficient supply, it assumes that a LEC will not overbuild its conduit so as to carry excess capacity available for sharing.

Trenching costs of conduit, however, account for most of the costs associated with underground facilities – and LECs can readily share these costs with other telecommunications companies, cable companies, electric, gas or water utilities, particularly when new construction is involved. Increased CATV penetration rates and accelerated facilities based entry by CLECs into local telecommunications markets will expand further future opportunities for underground structure sharing. In addition, in high density urban areas, use of existing underground conduit is a much more economic alternative than excavating established streets and other paved areas.

Sharing of trenches used for buried cable is already the norm, especially in new housing subdivisions. In the typical case, power companies, cable companies and LECs simply place their facilities in a common trench, and share equally in the costs of trenching, backfilling and surface repair. Gas, water and sewer companies may also occupy the trench in some localities. Economic and regulatory factors are likely to increase further incentives for LECs to schedule and perform joint trenching operations in an efficient manner.

Aerial facilities offer the most extensive opportunities for sharing. The practice of sharing poles through joint ownership or monthly lease arrangements is already widespread. Indeed, the typical pole carries the facilities of at least three potential users – power companies, telephone companies and cable companies. Power companies and LECs typically share the ownership of poles through either cross-lease or condominium arrangements, or through other arrangements such as one where the telephone company and power company each own every other pole. Cable companies have commonly leased a portion of the pole space available for low voltage applications from either the telephone company or the power company.

Methods of setting purchase prices and of calculating pole attachment rates generally are prescribed by federal and state regulatory authorities.

The number of parties wishing to participate in pole sharing arrangements should only increase with the advent of competition in local telecommunications markets. Economic and institutional factors strongly support reliance on pole sharing arrangements. It makes economic sense for power companies, cable companies and telephone companies to share pole space because they are all serving the same customer. Moreover, most local authorities restrict sharply the number of poles that can be placed on any particular right-of-way, thus rendering pole space a scarce resource. The Federal Telecommunications Act reinforces and regulates the market for pole space by prescribing nondiscriminatory access to poles (as well as to conduit and other rights-of-way) for any service provider that seeks access. The aerial distribution share factors displayed below capture a forward-looking view of the importance of these arrangements in an increasingly competitive local market.

Structure Sharing Parameters

The Hatfield Model captures the effects of structure sharing arrangements through the use of user-adjustable structure sharing parameters. These define the fraction of total required investment that will be borne by the LEC for distribution and feeder poles, and for trenching used as structure to support buried and underground telephone cables. Since best forward looking practice indicates that structure will be shared among LECs, IXCs, CAPs, cable companies, and other utilities, default structure sharing parameters are assumed to be less than one. Incumbent telephone companies, then, should be expected to bear only a portion of the forward-looking costs of placing structure, with the remainder to be assumed by other users of this structure.

The default LEC structure share percentages displayed below reflect most likely, technically feasible structure sharing arrangements. For both distribution and feeder facilities, structure share percentages vary by facility type to reflect differences in the degree to which structure associated with aerial, buried or underground facilities can reasonably be shared. Structure share parameters for aerial and underground facilities also vary by density zone to reflect the presence of more extensive sharing opportunities in urban and suburban areas. In addition, LEC shares of buried feeder structure are larger than buried distribution structure shares because a LEC's ability to share buried feeder structure with power companies is less over the relatively longer routes that differentiate feeder runs from distribution runs. This is because power companies generally do not share trenches with telephone facilities over distances exceeding 2500 ft.[48]

[48] A LEC's sharing of trenches with power companies, using random separation between cables for distances greater than 2,500 feet requires that either the telecommunications cable have no metallic components (i.e., fiber cable), or that both companies follow "Multi-Grounded Neutral" practices (use the same connection to earth ground at least every 2,500 feet).

Structure Percent Assigned to Telephone Company						
	Distribution			Feeder		
Density Zone	Aerial	Buried	Under-ground	Aerial	Buried	Under-ground
0-5	.50	.33	1.00	.50	.40	.50
5-100	.33	.33	.50	.33	.40	.50
100-200	.25	.33	.50	.25	.40	.40
200-650	.25	.33	.50	.25	.40	.33
650-850	.25	.33	.40	.25	.40	.33
850-2,550	.25	.33	.33	.25	.40	.33
2,550-5,000	.25	.33	.33	.25	.40	.33
5,000-10,000	.25	.33	.33	.25	.40	.33
10,000+	.25	.33	.33	.25	.40	.33

Support

Actual values for the default structure sharing parameters were determined through forward-looking analysis as well as assessment of the existing evidence of structure sharing arrangements. Information concerning present structure sharing practices is available through a variety of sources, as indicated in the references to this section. The HM 3.1 estimates of best forward-looking structure shares have been developed by combining this information with expert judgments regarding the technical feasibility of various sharing arrangements, and the relative strength of economic incentives to share facilities in an increasingly competitive local market. The reasoning behind the Hatfield Model's default structure sharing parameters is described below.

Aerial Facilities:

As noted in the overview to this section, aerial facilities (poles) are already a frequently shared form of structure, a fact that can readily be established through direct observation. For all but the two lowest density zones, the Hatfield Model uses default aerial structure sharing percentages that assign 25 percent of aerial structure costs to the incumbent telephone company. This assignment reflects a conservative assessment of current pole ownership patterns, the actual division of structure responsibility between high voltage (electric utility) applications and low voltage applications, and the likelihood that incumbent telephone companies will share the available low voltage space on their poles with additional attachers.[49]

ILECs and Power Companies generally have preferred to operate under "joint use," "shared use," or "joint ownership" agreements whereby responsibility for poles is divided between the ILEC and the power company, both of whom may benefit from the presence of third party attachers. New York Telephone

[49] This sharing may be either of unused direct attachment space on the pole, or via co-lashing of other users' low voltage cables to the LEC's aerial cables. See, Direct Panel Testimony of Richard Wolf, Clay T. Whitehead, Donald Fiscella, David Peacock and Dr. Miles Bidwell on Behalf of the Electric Utilities, Case 95-C-0341: Pole Attachments, State of New York Public Service Commission, January 27, 1997.

reports, for example, that almost 63 percent of its pole inventory is jointly owned,[50] while, in the same proceeding, Niagara Mohawk Power Company reported that 58 percent of its pole inventory was jointly owned[51]. Financial statements of the Southern California Joint Pole Committee indicate that telephone companies hold approximately 50 percent of pole units[52]. Although proportions may vary by region or state, informed opinion of industry experts generally assign about 45 percent of poles to telephone companies. Note that both telephone companies and power companies may lease space on poles solely owned by the other.

While the responsibility for a pole may be joint, it is typically not equal. Because a power company commonly needs to use a larger amount of the space on the pole to ensure safe separation between its conductors that carry currents of different voltages (e.g., 440 volt conductors versus 220 volt conductors) and between its wires and the wires of low voltage users, the power company is typically responsible for a larger portion of pole cost than a telephone company.

Because of the prevalence of joint ownership, sharing, and leasing arrangements, it is unusual for a telephone company to use poles that are not also used by a power company. ILEC structure costs are further reduced by the presence of other attachers in the low voltage space. Perhaps the best example is cable TV. Rather than install their own facilities, CATV companies generally have leased low voltage space on poles owned by the utilities. Thus, the ILECs have been able to recover a portion of the costs of their own aerial facilities through pole attachment rental fees paid by the CATV companies. The proportion of ILEC aerial structure costs recoverable through pole attachment fees is now likely to increase still further as new service providers enter the telecommunications market.

As noted above, the other, most obvious reason for assigning a share of aerial structure costs as low as 25 percent to the ILEC is the way that the space is used on a pole. HM 3.1 assumes that ILECs install the most commonly placed pole used for joint use, a 40 foot, Class 4 pole.[53] Of the 40 foot pole length, the first six feet are buried in the ground, and the next 20 feet above the ground are unusable to ensure adequate overhead clearance. This leaves about 14 feet of potentially as "usable" space. Of this usable space, roughly half is used by the power company which has greater needs for intercable separation. That leaves the remaining half to be shared by low voltage users, including CATV companies and competing telecommunications providers. The diagram below depicts the situation.

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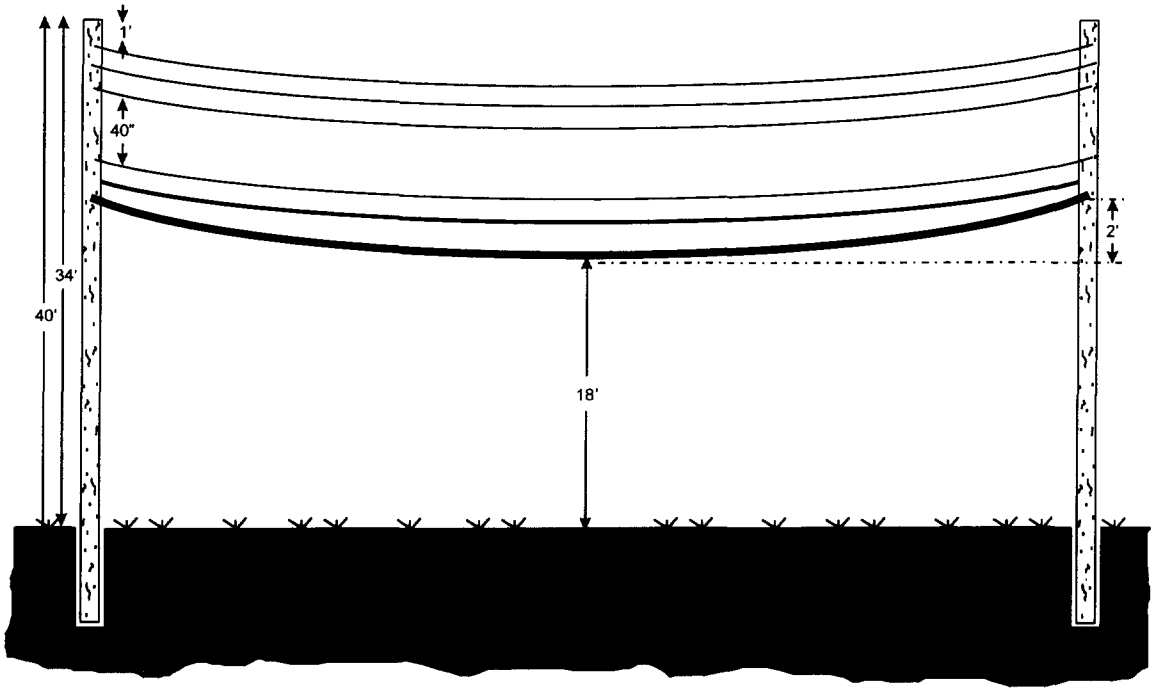
[50] New York Telephone's Response to Interrogatory of January 22, 1997, Case 95-C-0341: Pole Attachments, State of New York Public Service Commission, January 27, 1997.

[51] Direct Panel Testimony of Richard Wolf, Clay T. Whitehead, Donald Fiscella, David Peacock and Dr. Miles Bidwell on Behalf of the Electric Utilities, Case 95-C-0341: Pole Attachments, State of New York Public Service Commission, January 27, 1997. These experts also predicted that sharing of poles among six attachers would not be uncommon.

[52] " Statement of Joint Pole Units and Annual Pole Unit Changes by Regular Members", Monthly Financial Statements of the Southern California Joint Pole Committee, October, 1996.

[53] A pole's "class" refers to the diameter of the pole, with lower numbers representing larger diameter poles.



Thus, a) because ILECs generally already bear well less than half of aerial structure costs; b) because ILECs now face increased opportunities and incentives to recover aerial facilities costs from competing local service providers; c) because new facilities-based entrants will be obliged to use ILEC-owned structure to install their own networks; and, d) because the Telecommunications Act requires ILECs to provide nondiscriminatory access to structure as a means of promoting local competition, on a forward-looking basis, it is extremely reasonable to expect that ILECs will need, on average, bear as little as 25 percent of the total cost of aerial structure.

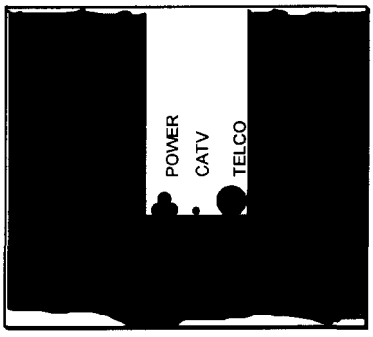
Buried Facilities:

Buried structure sharing practices are more difficult to observe directly than pole sharing practices. Some insight into the degree to which buried structure is, and will be shared can be gained from prevailing municipal rules and architectural conventions governing placement of buried facilities. As mentioned in the overview, municipalities generally regulate subsurface construction. Their objectives are clear: less damage to other subsurface utilities, less cost to ratepayers, less disruption of traffic and property owners, and fewer instances of deteriorated roadways from frequent excavation and potholes.

Furthermore, since 1980, new subdivisions have usually been served with buried cable for several reasons. First, prior to 1980, cables filled with water blocking compounds had not been perfected. Thus, prior to that time, buried cable was relatively expensive and unreliable. Second, reliable splice closures of the type required for buried facilities were not the norm. And third, the public now clearly desires more out-of-sight plant for both esthetic and safety related reasons. Contacts with telephone outside plant engineers, architects and property developers in several states confirm that in new subdivisions, builders typically not only prefer buried plant that is capable of accommodating multiple uses, but they usually dig the trenches at their own expense, and place power, telephone, and CATV cables in the trenches, if the utilities are willing to supply the materials. Thus, many buried structures are available to the LEC at no charge. The effect of such "no charge" use of developer-dug trenches reduces greatly the effective portion of total buried structure cost borne by the LEC. Note, too, that because power companies do not need to use a disproportionately large fraction of a trench – in contrast to their disproportionate use of pole space, and

because certain buried telephone cables are plowed into the soil rather than placed in trenches, the HM 3.1 assumed LEC share of buried structure generally is greater than of aerial structure.

Facilities are easily placed next to each other in a trench as shown below:



Underground Facilities:

Underground plant is generally used in more dense areas, where the high cost of pavement restoration makes it attractive to place conduit in the ground to permit subsequent cable reinforcement or replacement, without the need for further excavation. Underground conduit usually is the most expensive investment per foot of structure -- with most of these costs attributable to trenching. For this reason alone, it is the most attractive for sharing.

In recent years, major cities such as New York, Boston, and Chicago have seen a large influx of conduit occupants other than the local telco. Indeed most of the new installations being performed today are cable placement for new telecommunications providers. As an example, well over 30 telecommunications providers now occupy ducts owned by Empire City Subway in New York City.[54] This trend is likely to continue as new competitors enter the local market.

References

Industry experience and expertise of Hatfield Associates

AT&T and MCI outside plant engineers.

Outside Plant Consultants

Montgomery County, MD Subdivision Regulations

Policy Relating to Grants of Location for New Conduit Network for the Provision of Commercial Telecommunications Services

Monthly Financial Statements of the Southern California Joint Pole Committee.

Conversations with representatives of local utility companies.

New York Telephone's Response to Interrogatory of January 22, 1997, Case 95-C-0341: Pole Attachments , State of New York Public Service Commission, January 27, 1997.

[54] Empire City Subway is the subsidiary of NYNEX that operates its underground conduits in New York City.

Direct Panel Testimony of Richard Wolf, Clay T. Whitehead, Donald Fiscella, David Peacock and Dr. Miles Bidwell on Behalf of the Electric Utilities, Case 95-C-0341: Pole Attachments, State of New York Public Service Commission, January 27, 1997.

"Statement of Joint Pole Units and Annual Pole Unit Changes by Regular Members", Monthly Financial Statements of the Southern California Joint Pole Committee, October, 1996.

APPENDIX B

Expenses in Hatfield 3.1 Model

Expense Group: Network Expenses
Explanation: Maintenance and repair of various categories of investment - outside plant (e.g., NID, drop, distribution, Service Area Interface, Circuit equipment, Feeder plant) and Central office equipment (e.g., switch)
Data Origin: New England Telephone Company Incremental Cost Study (switching and circuit operating expenses), Hatfield Consultant (NID), FCC ARMIS 43-03 (everything else).

6212 Digital Electronic Expense
6230 Operator Systems Expense
6232 Circuit Equipment Expense
6351 Public
6362 Other Terminal Equipment
6411 Poles
6421 Aerial Cable
6422 Underground Cable
6423 Buried Cable
6426 Intrabuilding Cable
6431 Aerial Wire
6441 Conduit Systems

Amount Determination: Expense-to-Investment ratio (NET Study, ARMIS); Dollar per Line for NID.
Application: Determine cost by multiplying Expense-to-Investment ratio times modeled investments; Determine NID cost by multiplying Dollar-per-Line times number of lines

Expense Group: Network Operations
Explanation: Network related expenses needed to manage the network but not accounted for on a plant type specific basis
Data Origin: ARMIS 43-03

6512 Provisioning Expenses
6531 Power Expenses
6532 Network Administration
6533 Testing
6534 Plant Operations Administration
6535 Engineering

Amount Determination: Hatfield default Network Operations Factor 50% times the embedded amount in ARMIS. Source of factor is Pacific Bell.
Application: Determine cost by allocating to unbundled network elements (UNEs) equiproportionally relative to UNE direct costs. Cost of "Network Administration" is allocated to traffic sensitive (i.e., switching, signaling and interoffice) UNEs only.

Expense Group: Network Support and Miscellaneous
Explanation: Miscellaneous expenses needed to support day to day operations
Data Origin: ARMIS 43-03

6112 Motor Vehicles	Hatfield: Network Support
6113 Aircraft	Hatfield: Network Support
6114 Special Purpose Vehicles	Hatfield: Miscellaneous
6116 Other Work Equipment	Hatfield: Miscellaneous

Amount Determination: In essence, embedded ARMIS levels are scaled to reflect the relative change in

either cable and wire (C&W) investment for Network Support Expenses or total investment for Miscellaneous Expenses in the modeled results versus ARMIS. For example:
Hatfield Cost
= Embedded ARMIS Expense x (Htfld C&W Inv./ARMIS C&W Inv.)
The rationale is that these costs will be lower in a forward-looking cost study.
Application: Determine cost by allocating to unbundled network elements (UNEs) equiproportionally relative to direct costs

Expense Group: Other Taxes
Explanation: Taxes paid on gross receipts and property (i.e., 7240 Other Operating Taxes)
Data Origin: Hatfield expert estimate of 5% is based on overall Tier 1 Company ratio of ARMIS 7240 Expenses to ARMIS Revenues.
Amount Determination: Modeled costs are grossed up by 5%.
Application: Determine cost by allocating to unbundled network elements (UNEs) equiproportionally relative to direct costs.

Expense Group: Miscellaneous
Explanation: Miscellaneous expenses needed to support day to day operations
Data Origin: ARMIS 43-03
6122 Furniture
6123 Office Equipment
6124 General Purpose Computer
6121 Buildings
Amount Determination: In essence, embedded ARMIS levels are scaled to reflect the relative change in total investment in the Hatfield model versus ARMIS. For example:
Hatfield Cost
= Embedded ARMIS Expense x (Hatfld Tot.Inv./ARMIS Tot.Inv.)
The rationale is that these costs will be lower in a forward-looking cost study.
Application: Determine cost by allocating to unbundled network elements (UNEs) equiproportionally relative to direct costs.

Expense Group: Carrier-to-carrier customer service
Explanation: This category includes all carrier customer-related expenses such as billing, billing inquiry, service order processing, payment and collections. End-user retail services are not included in UNE cost development.
Data Origin: ARMIS 4304 (carrier-to-carrier cost to serve IXC access service)
7150 Service Order Processing
7170 Payment and Collections
7190 Billing Inquiry
7270 Carrier Access Billing System
Amount Determination: Hatfield multiplies embedded amount (across Tier 1 LECs) times 70% to get $1.69 per line per year. The cost is determined by multiplying the cost per line times the number of lines. This figure includes the above business office activities, hence there is no need for a separate non-recurring charge to account for this activities. The underlying data that the UNE costs were developed from include other types of non-recurring costs outside the business office. Most of the non-recurring costs are captured in the Hatfield UNE estimate.
Application: Determine cost by allocating to unbundled network elements (UNEs) equiproportionally relative to direct costs.

Expense Group: Variable Overhead

Explanation: Executive, Planning and General and Administrative costs
Data Origin: ARMIS 43-03

6711 Executive
6712 Planning
6721 Accounting & Finance
6722 External Relations
6723 Human Resources
6724 Information Management
6725 Legal
6726 Procurement
6727 Research & Development
6728 Other General & Administrative

Amount Determination: Hatfield estimates 10.4% multiplier based on AT&T public data.

		$Mill	Source
A	Rev. Net of Settlements	36,877	Form M 1994
B	Settlement Payout	4,238	Intl Traffic Data 1/19/96
C	Gross Revenues	41,115	A + B
D	Corporate Operations	3,879	Form M 1994
E	Revenue less Corp. Op.	37,236	C - D
F	Ratio	10.4%	D/E

Application: Cost is determined by multiplying the sum of all costs by 1.104.

Expense Group: Carrier-to-carrier Uncollectibles
Explanation: Revenues not realized associated with services provided (i.e., delinquency, fraud)
Data Origin: Company-specific ratio calculated from ARMIS 4304 Uncollectibles to ARMIS Access Revenues.
Amount Determination: Modeled costs are grossed up by the uncollectible rate.
Application: Determine cost by allocating to unbundled network elements (UNEs) equiproportionally relative to direct costs.

Benchmark Cost Proxy Model Results

Plant Summary Report

PACIFIC BELL
California
Investment: UnCapped[1]

Density Group	0 to 10	11 to 50	51 to 150	151 to 500	501 to 2000	2001 to 5000	> 5001	Total
Investment Per Line Data								
Loop Distribution Investment	$ 3,352	$ 1,999	$ 1,151	$ 664	$ 411	$ 317	$ 213	$ 424
Loop Feeder Investment	$ 3,295	$ 1,053	$ 516	$ 320	$ 249	$ 218	$ 154	$ 262
Total Uncapped Loop Investment	$ 6,647	$ 3,052	$ 1,667	$ 984	$ 660	$ 535	$ 367	$ 686
Switch Investment	$ 341	$ 261	$ 239	$ 231	$ 226	$ 224	$ 223	$ 227
InterOffice Facilities	$ 10	$ 8	$ 7	$ 7	$ 7	$ 7	$ 7	$ 7
Other Investment	$ 401	$ 199	$ 123	$ 85	$ 67	$ 60	$ 51	$ 69
Total Investment	$ 7,400	$ 3,520	$ 2,036	$ 1,307	$ 960	$ 826	$ 648	$ 989
Cost Per Month Data								
Capital Cost	$ 121.01	$ 58.50	$ 33.98	$ 22.08	$ 16.37	$ 14.06	$ 11.10	$ 16.75
Operating Expense per Line	$ 11.34	$ 11.34	$ 11.34	$ 11.34	$ 11.34	$ 11.34	$ 11.34	$ 11.34
Total Cost per Line (Excluding Gross Reciepts Tax)	$ 132.36	$ 69.84	$ 45.33	$ 33.42	$ 27.71	$ 25.40	$ 22.44	$ 28.10
Line Data								
Loop Distribution Length	5,366	5,594	5,214	3,873	2,189	1,186	782	1,784
Loop Feeder Length	75,083	39,644	25,400	16,553	12,198	10,208	7,386	12,014
Total Loop Length	80,448	45,237	30,613	20,426	14,387	11,394	8,168	13,797
Number of Households	35,503	262,909	276,850	502,851	1,811,372	3,412,016	1,909,179	8,210,680
Number of Residential Lines	41,588	307,970	324,300	589,036	2,121,828	3,996,810	2,236,398	9,617,929
Number of Single Business Lines	9,667	64,927	110,371	251,082	842,423	1,150,927	782,210	3,211,607
Multiple Business Lines	8,376	56,250	95,622	217,529	729,849	997,126	677,682	2,782,434
Total CBG Lines Served	59,631	429,147	530,293	1,057,647	3,694,100	6,144,863	3,696,290	15,611,970

Benchmark Cost Proxy Model Results

Plant Summary Report

PACIFIC BELL
California
Investment: UnCapped[1]

Aggregate Support Data	0 to 10	11 to 50	51 to 150	151 to 500	501 to 2000	2001 to 5000	> 5001	Total
Support Over $20 Benchmark	$ 62,782,517	$ 200,864,034	$ 124,204,875	$ 130,704,146	$ 265,734,266	$ 313,129,055	$ 90,366,156	###########
Support Over $30 Benchmark	$ 57,366,062	$ 161,606,476	$ 80,119,462	$ 53,499,496	$ 44,947,641	$ 16,192,510	$ 840,872	$ 414,572,520
Support Over $40 Benchmark	$ 51,965,027	$ 123,064,951	$ 41,747,892	$ 8,279,511	$ 1,643,315	$ 427,383	$ 23,785	$ 227,151,866
Support Over $50 Benchmark	$ 46,633,678	$ 86,446,906	$ 15,315,646	$ 653,464	$ 114,896	$ 75,973	$ 7,599	$ 149,248,162
Support Over $60 Benchmark	$ 41,398,876	$ 53,608,604	$ 4,213,972	$ 180,056	$ 29,819	$ 21,126	$ -	$ 99,452,453
Support Over $70 Benchmark	$ 36,184,806	$ 28,987,256	$ 850,021	$ 96,565	$ 10,790	$ 8,546	$ -	$ 66,137,984
Support Over $80 Benchmark	$ 31,220,373	$ 14,520,397	$ 142,888	$ 69,908	$ 7,616	$ 7,346	$ -	$ 45,968,528

[1] **The Average Loop Investment per line**

Assumptions:
NATLBASE.CSV, CAPCOST.INF
BCPM.XLS
National Run at BCPM Defaults

Benchmark Cost Proxy Model Results

Key Elements

PACIFIC BELL
California

Analysis	Total	Per Line
CBG Lines Served	15,611,970	
Average Distribution Length	27,845,935,840	1,784
Average Feeder Length	187,554,807,359	12,014
Average Loop Length	215,400,743,199	13,797
Distribution Investment	$ 6,623,924,344	$ 424
Feeder Investment	$ 4,090,584,220	$ 262
Loop Investment (Uncapped)	$ 10,714,508,564	$ 686
Loop Investment (Capped)	$ 10,682,167,284	$ 684

Plant Type	Capped Annual Investment	Percentage	Annual Per Line Investment
Motor Vehicle	$ 105,867,419	0.69%	$ 6.78
Special Purpose Vehicle	$ 143,258	0.00%	$ 0.01
Garage Work	$ 4,584,245	0.03%	$ 0.29
Other Work	$ 89,822,560	0.58%	$ 5.75
Furniture	$ 33,379,037	0.22%	$ 2.14
Office	$ 100,423,627	0.65%	$ 6.43
General Purpose Computers	$ 424,758,995	2.76%	$ 27.21
Total Support Investment	$ 758,979,141	4.93%	$ 48.62
Land	$ 42,660,721	0.28%	$ 2.73
Building	$ 269,090,701	1.75%	$ 17.24
Switching Equipment	$ 3,540,015,018	22.99%	$ 226.75
Circuit Equipment	$ 2,595,265,270	16.86%	$ 166.24
Buried Cable	$ 4,117,206,314	26.74%	$ 263.72
Aerial Cable	$ 691,427,038	4.49%	$ 44.29
Underground Cable	$ 1,679,858,521	10.91%	$ 107.60
Pole Investment	$ 308,614,234	2.00%	$ 19.77
Conduit Investment	$ 1,393,380,705	9.05%	$ 89.25
Total Plant Investment	$ 14,637,518,523	95.07%	$ 937.58
Total Investment	$ 15,396,497,664	100.00%	$ 986.20

Assumptions:

NATLBASE.CSV, CAPCOST.INF

BCPM.XLS

National Run at BCPM Defaults

Benchmark Cost Proxy Model Results

Key Elements

PACIFIC BELL
California

Expense Account		Capped Annual Expense	Percentage		Monthly Per Line Cost
Plant Specific Expenses					
Network Support	$	27,914,203	0.82%	$	0.15
General Support	$	224,812,374	6.59%	$	1.20
COE Switch	$	63,696,839	1.87%	$	0.34
Operator Systems	$	1,686,093	0.05%	$	0.01
COE Transmission	$	43,276,382	1.27%	$	0.23
Information IOT	$	12,552,024	0.37%	$	0.07
Cable & Wire	$	516,881,118	15.15%	$	2.76
Total Plant Specific Expenses	$	890,819,034	26.11%	$	4.76
Plant Non-Specific Expenses					
Other PP&E	$	5,620,309	0.16%	$	0.03
Network Operations	$	249,541,736	7.31%	$	1.33
Depreciation/Amort	$	1,286,449,293	37.71%	$	6.87
Marketing	$	66,319,650	1.94%	$	0.35
Customer Opr Service	$	453,371,622	13.29%	$	2.42
Executive & Planning	$	25,666,079	0.75%	$	0.14
General & Administration	$	402,039,463	11.78%	$	2.15
Prov Uncollectibles	$	31,848,420	0.93%	$	0.17
Total Plant Non-Specific Expenses	$	2,520,856,572	73.89%	$	13.46
Total Operating Expense	$	3,411,675,606	100.00%		18.21
Federal and State Taxes	$	653,532,163		$	3.49
Return On Investment	$	1,192,368,441		$	6.36
Monthly Cost per Line	$	5,257,576,210		$	28.06
Gross Receipts Tax[1]	$	213,366,776		$	1.14

[1] **Application varies so much on a state by state basis, it is not included in the Monthly Cost.**

Assumptions:
NATLBASE.CSV, CAPCOST.INF
BCPM.XLS

Benchmark Cost Proxy Model Results

Area Wide Summary Report

PACIFIC BELL
California

Investment Per Line Data	Uncapped Annual Amount	Capped[1] Annual Amount
Loop Investment	$ 686	$ 684
Switch Investment	$ 227	$ 227
IOF Investment	$ 7	$ 7
Other Investment	$ 69	$ 69
Total Investment	$ 989	$ 986
Expense Per Month Data		
Capital Cost	$ 16.75	$ 16.72
Operating Expense per Line	$ 11.34	$ 11.34
Total Cost per Line	$ 28.10	$ 28.06
Gross Receipts Tax[2]	$ 1.14	$ 1.14
Line Data		
Average Loop Length in Feet	13,797	
Lines Above $10K Loop Inv	6,113	
Number of Households	8,210,680	
Number of Residential Lines	9,617,929	
Number of Single Business Lines	3,211,607	
Multiple Business Lines	2,782,434	
Total CBG Lines Served	15,611,970	
Aggregate Support Data		
Support Over $20 Benchmark	$ 1,187,785,048	$ 1,182,520,574
Support Over $30 Benchmark	$ 414,572,520	$ 409,308,045
Support Over $40 Benchmark	$ 227,151,866	$ 221,887,391
Support Over $50 Benchmark	$ 149,248,162	$ 143,983,687
Support Over $60 Benchmark	$ 99,452,453	$ 94,187,978
Support Over $70 Benchmark	$ 66,137,984	$ 60,873,510
Support Over $80 Benchmark	$ 45,968,528	$ 40,704,053

[1] **CBGs with Average Loop Investment per line over $10,000 are capped at $10,000**

[2] **Application varies so much on a state by state basis, it is not included in the Monthly Cost.**

Assumptions:
NATLBASE.CSV, CAPCOST.INF
BCPM.XLS
National Run at BCPM Defaults

Benchmark Cost Proxy Model Results

Plant Summary Report

GTE CO OF CA
California
Investment: UnCapped[1]

Density Group	0 to 10	11 to 50	51 to 150	151 to 500	501 to 2000	2001 to 5000	> 5001	Total
Investment Per Line Data								
Loop Distribution Investment	$ 2,861	$ 1,806	$ 1,046	$ 669	$ 441	$ 330	$ 233	$ 435
Loop Feeder Investment	$ 3,203	$ 957	$ 460	$ 305	$ 233	$ 201	$ 139	$ 240
Total Uncapped Loop Investment	$ 6,064	$ 2,763	$ 1,506	$ 974	$ 674	$ 531	$ 372	$ 674
Switch Investment	$ 314	$ 252	$ 236	$ 230	$ 227	$ 225	$ 224	$ 227
InterOffice Facilities	$ 9	$ 8	$ 7	$ 7	$ 7	$ 7	$ 7	$ 7
Other Investment	$ 367	$ 182	$ 114	$ 84	$ 68	$ 60	$ 52	$ 68
Total Investment	$ 6,754	$ 3,205	$ 1,862	$ 1,295	$ 976	$ 823	$ 655	$ 976
Cost Per Month Data								
Capital Cost	$ 110.45	$ 53.36	$ 31.15	$ 21.87	$ 16.58	$ 13.93	$ 11.18	$ 16.51
Operating Expense per Line	$ 11.34	$ 11.34	$ 11.34	$ 11.34	$ 11.34	$ 11.34	$ 11.34	$ 11.34
Total Cost per Line (Excluding Gross Reciepts Tax)	$ 121.79	$ 64.70	$ 42.49	$ 33.21	$ 27.92	$ 25.28	$ 22.53	$ 27.86
Line Data								
Loop Distribution Length	5,218	5,650	5,183	4,121	2,360	1,219	815	1,946
Loop Feeder Length	77,491	42,834	22,758	16,661	11,629	9,118	6,859	11,402
Total Loop Length	82,709	48,484	27,941	20,782	13,989	10,338	7,674	13,348
Number of Households	4,938	51,166	69,863	174,716	619,140	1,043,742	402,038	2,365,603
Number of Residential Lines	5,784	59,935	81,837	204,661	725,256	1,222,631	470,944	2,771,049
Number of Single Business Lines	2,102	16,611	38,132	82,053	236,821	310,061	133,525	819,306
Multiple Business Lines	1,822	14,391	33,036	71,089	205,175	268,627	115,681	709,820
Total CBG Lines Served	9,708	90,937	153,005	357,803	1,167,252	1,801,319	720,150	4,300,175

Benchmark Cost Proxy Model Results

Plant Summary Report

GTE CO OF CA
California
Investment: UnCapped[1]

Aggregate Support Data	0 to 10	11 to 50	51 to 150	151 to 500	501 to 2000	2001 to 5000	> 5001	Total
Support Over $20 Benchmark	$ 8,994,487	$ 37,851,271	$ 31,602,132	$ 44,012,644	$ 86,670,154	$ 89,801,620	$ 18,202,374	$ 317,134,681
Support Over $30 Benchmark	$ 8,149,629	$ 29,780,035	$ 20,060,790	$ 17,874,648	$ 13,691,585	$ 3,358,189	$ 133,678	$ 93,048,554
Support Over $40 Benchmark	$ 7,306,906	$ 21,986,029	$ 10,487,778	$ 2,810,953	$ 352,687	$ 151,255	$ 2,946	$ 43,098,553
Support Over $50 Benchmark	$ 6,489,227	$ 14,912,908	$ 4,038,052	$ 136,434	$ 106,472	$ 57,058	$ -	$ 25,740,151
Support Over $60 Benchmark	$ 5,748,689	$ 9,182,084	$ 1,303,941	$ 60,642	$ 79,601	$ 37,609	$ -	$ 16,412,567
Support Over $70 Benchmark	$ 5,033,781	$ 5,368,551	$ 431,761	$ 49,461	$ 67,899	$ 31,969	$ -	$ 10,983,422
Support Over $80 Benchmark	$ 4,336,997	$ 3,178,146	$ 9,909	$ 39,141	$ 56,477	$ 26,329	$ -	$ 7,646,999

[1] **The Average Loop Investment per line**

Assumptions:
NATLBASE.CSV, CAPCOST.INF
BCPM.XLS
National Run at BCPM Defaults

Benchmark Cost Proxy Model Results

Key Elements

GTE CO OF CA
California

Analysis	Total	Per Line
CBG Lines Served	4,300,175	
Average Distribution Length	8,369,700,663	1,946
Average Feeder Length	49,029,457,625	11,402
Average Loop Length	57,399,158,289	13,348
Distribution Investment	$ 1,868,809,657	$ 435
Feeder Investment	$ 1,031,208,608	$ 240
Loop Investment (Uncapped)	$ 2,900,018,265	$ 674
Loop Investment (Capped)	$ 2,894,959,236	$ 673

Plant Type	Capped Annual Investment	Percentage	Annual Per Line Investment
Motor Vehicle	$ 28,812,647	0.69%	$ 6.70
Special Purpose Vehicle	$ 38,989	0.00%	$ 0.01
Garage Work	$ 1,247,638	0.03%	$ 0.29
Other Work	$ 24,445,913	0.58%	$ 5.68
Furniture	$ 9,084,366	0.22%	$ 2.11
Office	$ 27,331,076	0.65%	$ 6.36
General Purpose Computers	$ 115,601,485	2.76%	$ 26.88
Total Support Investment	$ 206,562,113	4.93%	$ 48.04
Land	$ 11,756,279	0.28%	$ 2.73
Building	$ 74,154,991	1.77%	$ 17.24
Switching Equipment	$ 975,543,861	23.28%	$ 226.86
Circuit Equipment	$ 657,835,871	15.70%	$ 152.98
Buried Cable	$ 1,163,161,287	27.75%	$ 270.49
Aerial Cable	$ 177,592,742	4.24%	$ 41.30
Underground Cable	$ 483,035,794	11.52%	$ 112.33
Pole Investment	$ 78,336,747	1.87%	$ 18.22
Conduit Investment	$ 363,363,331	8.67%	$ 84.50
Total Plant Investment	$ 3,984,780,905	95.07%	$ 926.66
Total Investment	$ 4,191,343,018	100.00%	$ 974.69

Assumptions:
NATLBASE.CSV, CAPCOST.INF
BCPM.XLS
National Run at BCPM Defaults

Benchmark Cost Proxy Model Results

Key Elements

GTE CO OF CA
California

Expense Account		Capped Annual Expense	Percentage		Monthly Per Line Cost
Plant Specific Expenses					
Network Support	$	7,688,713	0.82%	$	0.15
General Support	$	61,922,524	6.62%	$	1.20
COE Switch	$	17,544,715	1.88%	$	0.34
Operator Systems	$	464,419	0.05%	$	0.01
COE Transmission	$	11,920,086	1.27%	$	0.23
Information IOT	$	3,457,341	0.37%	$	0.07
Cable & Wire	$	142,370,204	15.22%	$	2.76
Total Plant Specific Expenses	$	245,368,003	26.23%	$	4.76
Plant Non-Specific Expenses					
Other PP&E	$	1,548,063	0.17%	$	0.03
Network Operations	$	68,734,002	7.35%	$	1.33
Depreciation/Amort	$	349,910,679	37.41%	$	6.78
Marketing	$	18,267,145	1.95%	$	0.35
Customer Opr Service	$	124,877,091	13.35%	$	2.42
Executive & Planning	$	7,069,488	0.76%	$	0.14
General & Administration	$	110,738,114	11.84%	$	2.15
Prov Uncollectibles	$	8,772,358	0.94%	$	0.17
Total Plant Non-Specific Expenses	$	689,916,940	73.77%	$	13.37
Total Operating Expense	$	935,284,942	100.00%		18.12
Federal and State Taxes	$	177,496,652		$	3.44
Return On Investment	$	323,698,674		$	6.27
Monthly Cost per Line	$	1,436,480,268		$	27.84
Gross Receipts Tax[1]	$	58,296,286		$	1.13

[1] **Application varies so much on a state by state basis, it is not included in the Monthly Cost.**

Assumptions:

NATLBASE.CSV, CAPCOST.INF

BCPM.XLS

Benchmark Cost Proxy Model Results

Area Wide Summary Report

GTE CO OF CA
California

Investment Per Line Data	Uncapped Annual Amount	Capped[1] Annual Amount
Loop Investment	$ 674	$ 673
Switch Investment	$ 227	$ 227
IOF Investment	$ 7	$ 7
Other Investment	$ 68	$ 68
Total Investment	$ 976	$ 975
Expense Per Month Data		
Capital Cost	$ 16.51	$ 16.49
Operating Expense per Line	$ 11.34	$ 11.34
Total Cost per Line	$ 27.86	$ 27.84
Gross Receipts Tax[2]	$ 1.13	$ 1.13
Line Data		
Average Loop Length in Feet	13,348	
Lines Above $10K Loop Inv	744	
Number of Households	2,365,603	
Number of Residential Lines	2,771,049	
Number of Single Business Lines	819,306	
Multiple Business Lines	709,820	
Total CBG Lines Served	4,300,175	
Aggregate Support Data		
Support Over $20 Benchmark	$ 317,134,681	$ 316,315,840
Support Over $30 Benchmark	$ 93,048,554	$ 92,229,713
Support Over $40 Benchmark	$ 43,098,553	$ 42,279,712
Support Over $50 Benchmark	$ 25,740,151	$ 24,921,310
Support Over $60 Benchmark	$ 16,412,567	$ 15,593,725
Support Over $70 Benchmark	$ 10,983,422	$ 10,164,580
Support Over $80 Benchmark	$ 7,646,999	$ 6,828,157

[1] **CBGs with Average Loop Investment per line over $10,000 are capped at $10,000**

[2] **Application varies so much on a state by state basis, it is not included in the Monthly Cost.**

Assumptions:
NATLBASE.CSV, CAPCOST.INF
BCPM.XLS
National Run at BCPM Defaults